UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,479	07/05/2005	Seiji Aiso	MIPFP137	7789

25920 7590 04/17/2009

MARTINE PENILLA & GENCARELLA, LLP
710 LAKEWAY DRIVE
SUITE 200
SUNNYVALE, CA 94085

EXAMINER	
CARTER, AARON W	

ART UNIT	PAPER NUMBER
2624	

MAIL DATE	DELIVERY MODE
04/17/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/541,479	AISO, SEIJI	
	Examiner	Art Unit	
	AARON W. CARTER	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 January 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,7,10-16,18 and 21-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7,10-16,18 and 21-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 July 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This action is responsive to papers filed on 1/5/09.

Response to Amendment

2. In response to applicant's amendment received on 1/5/09, all requested changes to the specification and claims have been entered. Claims 6, 8, 9, 17, 19 and 20 have been cancelled.

Response to Arguments

3. Applicant's arguments filed 1/5/09 have been fully considered but they are not persuasive.

Applicants argue that the prior art of Peleg does not teach or fairly suggest that an image is excluded if the image shift amount is less than a predetermined threshold value.

The Examiner disagrees. The prior of Peleg discloses the determination of a degree of overlap and if the measured overlap is too large then the image is excluded, see page 6, line 35 – page 7, line 4 and page 11, lines 1-10. A large overlap corresponds to a small amount of relative image shift between images being. For example, if two images are identical, completely overlapping, then the relative shift between them would be zero.

Claim Objections

4. Claim 1 is objected to because of the following informalities: In line 5, the phrase "one ore more" appears to contain a misspelled word. Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-5, 7, 11-16 and 18, 22-24 are rejected under 35 U.S.C. 102(b) as being anticipated by Peleg et al., WO 98/02844 published on Jan. 22, 1998 ("Peleg") (already of record).

Regarding claim 1, Peleg discloses 'An image generating device for generating a still image from a plurality of frame images contained in a video sequence' (see page 3, line 32 – 36 ; page 5, lines 10 - 15). Peleg specifically suggests an apparatus for constructing an image mosaic (a still image from a plurality of images) and that the source of images can be a video camera (hence a video).

'a synthesis object setting module for setting, from among areas included in frame images other than a reference frame image selected from among the plurality of frame images (see page 3 lines 28 – 36; Peleg specifically suggests a means for selecting source images and a means for selecting source image segments from the set of images), one or more areas as object frame image areas for synthesis (see page 3, lines 28 – 36; page 6 lines 7 – 10; Peleg specifically suggests cutting sub-images out of larger images to merged into the mosaic), the object frame

image areas being selected according to a predetermined rule relating to a reference frame image area within the reference frame image' (see page 1, lines 31 – 33; page 6, lines 12 – 22; page 7 lines 14 – 25). Peleg specifically suggests that sub-regions of the images are selected or inclusion in the mosaic based on location or quality (predetermine rule);

'a comparison reference extracting module for extracting one comparison reference frame image area from among the reference frame image area and the object frame image areas for synthesis' (see page 7, lines 14 - 25). Peleg specifically suggests that the automatic selection finds appropriate cut lines between neighboring images;

'a target extracting module for extracting one target frame image area from among the object frame image areas for synthesis other than the comparison reference frame image area (see page 6, lines 7 - 10). Peleg specifically suggests that source selection includes cutting sub images (target frame area) out of larger images (object frame image);

'a comparing module for comparing the comparison reference frame image area with the target frame image area to calculate a relative image shift amount between the comparison reference frame image area and the target frame image area (see page 3, lines 28 – 36; page 6, lines 16 – 19; page 6 lines 36 – page 7 line 4 and page 11, lines 1-10). Peleg specifically suggests that the alignment process provides information on the degree of overlap and that images may be discarded if their overlap is too large or images added if the overlap is too little; the overlap corresponds to the relative image shift in which a large overlap corresponds to a small amount of image shift, and the alignment of the images teaches a comparison of those images;

'an excluding module for excluding the target frame image area from the object frame image areas for synthesis if the relative shift amount is less than a predetermined value' (see page 6, lines 36 – page 7, line 4 and page 11, lines 1-10) Peleg specifically suggests that the alignment process provides information on the degree of overlap and that images may be discarded if their overlap is too large or images added if the overlap is too little; the overlap corresponds to the relative image shift in which a large degree of overlap corresponds to a small amount of image shift; and

'a synthesized image generating module for synthesizing the reference frame image area and the object frame image areas for synthesis to create a synthesized image area of a still image that has a higher resolution than the frame images' (see page 3, lines 28 – 36; page 6, lines 12 – 22; page 7, lines 33 – 35 and Fig 4). Peleg specifically suggests the generation of a mosaic image (synthesized image area) from a set of images and wherein the constructed mosaic has a higher resolution than the individual frame images.

Regarding claim 2, Peleg discloses 'a setting module for setting as the reference frame image area an area within the reference frame image, to serve as a reference for synthesis' (see page 3, lines 28 – 36). Peleg specifically suggests constructing a mosaic image by selecting source images, aligning them to select source image segments (frame image area within the frame image) to merge (synthesize) them into a mosaic; and

'a frame number controlling module for repeating processes of the synthesis object setting module, the comparison reference extracting module, the object extracting module, the comparing module, and the excluding module, until the total number of the reference frame

image area and the object frame image areas for synthesis reaches a predetermined number. (see page 9, lines 29 – 34; page 5 line 35 – 35; page 6, lines 1 - 4). Peleg specifically suggests that his method is iterative this teaches that all steps setting, comparison, extraction and exclusion are repeated. Peleg also teaches that start and stop frames are selected and that all intermediate frames should be used, which teaches that once the number of intermediate frames is used (the predetermined number) processing stops.

Regarding claim 3, Peleg discloses 'a specification receiving module for receiving specification of the reference frame image, wherein the setting module sets the specified frame image as the reference frame image' (see abstract; page 5 line 31 – 34). Peleg specifically suggests that a set of images is selected to be combined from a set of source images and that the selection process finds a set of good quality images that cover the intended domain and content (reference frame image).

Regarding claim 4, Peleg discloses 'the comparison reference extracting module sets the reference frame image area as the comparison reference frame image area' (see page 28, lines 19 – 26). Peleg specifically suggests that the most recently aligned image is designated the region of interest for correlation (comparison) between it and current image.

Regarding claim 5, Peleg discloses 'an eliminating module for eliminating, from among the object frame image areas for synthesis, an area of frame image for which a characteristic of the frame image area meets a predetermined condition' (see page 6, line 37 – page 7 line 4).

Peleg specifically suggests that images may be discarded (eliminated) if their overlap is too large (predetermined condition).

Regarding claim 7, Peleg discloses 'a frame shift calculating module for calculating the image shift amount of a target frame image containing the target frame image area, with respect to a comparison reference frame image containing the comparison reference frame image area (see page 6, lines 12 – 19). Peleg specifically suggests that the source images are aligned with one another so that each is in registration with the corresponding portions of neighboring images and that alignment entails finding a geometrical transformation (shift) that brings them into a common coordinate system; By finding this geometrical transformation the shift amount of the target frame with respect to the comparison frame image is found as well as the shift amount of the target frame image area with respect to the comparison image area; and

'an area shift calculating module for calculating the image shift amount of the target frame image area with respect to the comparison reference frame image area, based on the image shift amount calculated by the frame shift calculating module'(see page 6, lines 12 – 19). Peleg specifically suggests that the source images are aligned with one another so that each is in registration with the corresponding portions of neighboring images and that alignment entails finding a geometrical transformation (shift) that brings them into a common coordinate system; By finding this geometrical transformation the shift amount of the target frame with respect to the comparison frame image is found as well as the shift amount of the target frame image area with respect to the comparison image area.

As to claim 11, please refer to the rejection of claim 1.

As to claim 12, please refer to the rejection of claim 1.

As to claim 13, please refer to the rejection of claim 2.

As to claim 14, please refer to the rejection of claim 3.

As to claim 15, please refer to the rejection of claim 4.

As to claim 16, please refer to the rejection of claim 5.

As to claim 18, please refer to the rejection of claim 7.

As to claim 22, please refer to the rejection of claim 1.

As to claim 23, please refer to the rejection of claim 1.

As to claim 24, please refer to the rejection of claim 1.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 10 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peleg (already of record) in view of USPN 5,987,164 to Szeliski et al. ("Szeliski") (already of record).

As to claim 10, Peleg discloses an image generating device according to claim 1.

Peleg does not disclose expressly wherein the reference frame image area and the object frame image area for synthesis are areas derived by dividing each frame image in an identical manner; and

The target extracting module extracts a target frame image area at a same location corresponding to the comparison reference frame image area.

However, Szeliski discloses 'the reference frame image area and the object frame image area for synthesis are areas derived by dividing each frame image in an identical manner' (see abstract; column 20, lines 58 - 63). Szeliski specifically suggests dividing both images into a number of 16x16 patches; and

'the target extracting module extracts a target frame image area at a same location corresponding to the comparison reference frame image area' (see column 4, lines 13 – 18). Szeliski specifically suggests that for each of the pixel locations in the one image, ray directions are determined to the relative 3-dimensional coordinate system of the corresponding pixel location (same location) in each of the other images.

Peleg & Szeliski are combinable because they are from the same art of image processing.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate the technique of dividing each frame image in an identical manner and the target extraction module, as taught by Szeliski, with the image generating device disclosed Peleg.

The suggestion/motivation for doing so would have been to reduce misregistration errors (*Szeliski, column 3, lines 25-48*).

Therefore, it would have been obvious to combine Peleg with Szeliski to obtain the invention as specified in claim 10.

As to claim 21, please refer to the rejection of claim 10 above.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 2005/0013466 to Beun discloses a process of combining images including excluding certain images based on a relative shift.

USPN 7,376,249 to Beun discloses a process of combining images including excluding certain images based on a relative shift.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to AARON W. CARTER whose telephone number is (571)272-7445. The examiner can normally be reached on 9am - 5:30 am (Mon. - Fri.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Werner can be reached on (571) 272-7401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Aaron W Carter/
Primary Examiner, Art Unit 2624